

## EXPLANATION OF PLATES 193 and 194

PLATE 193, upper fig., basal leaflet of *LIGUSTICUM SCOTHICUM*, to show venation,  $\times 3$ ; lower fig., venation  $\times 20$ . PLATE 194, upper fig., basal leaflet of *L. HULTENII*, to show venation,  $\times 3$ ; lower fig., venation,  $\times 20$ .

II. *CAREX MACROCEPHALA* AND *C. ANTHERICOIDES*

M. L. FERNALD

DR. Charles W. Townsend sent me in November last a much battered "pocket specimen" of a grass-like plant which he had found "on a sand dune near Seaside Park, near Tom's River, New Jersey," with the additional information that "it was said to have spread rapidly over the dune, and that it was never planted there . . . The care-taker of the property thought it would be an excellent sand binder, which it appears to be, as it makes a close mat." The plant had nearly cylindrical culms and no fruit, so, taking it upon casual inspection to be a grass, I sent half the material to Mrs. Agnes Chase for identification. In the absence of Mrs. Chase, the plant was examined by Mr. E. C. Leonard who has correctly identified it as *Carex macrocephala* Willd. of the sandy coast of eastern Asia, from eastern Kamtchatka, Sachalin Island and Japan to Shantung. It is apparently quite at home on the New Jersey sands, for Mr. J. R. Swallen of the Bureau of Plant Industry writes: "This is the second specimen that has been sent in from New Jersey."

*Carex macrocephala* is generally supposed to occur on the Pacific coast of North America, from southern Alaska to Oregon; but Dr. Townsend's material so closely matches the Asiatic specimens and so far departs from the fine series in the Gray Herbarium from the sands of British Columbia, Washington and Oregon that I have compared the two series with some care. It now becomes clear that the plant of western North America is a thoroughly distinct species, for more than a century wrongly identified with the Asiatic *C. macrocephala*. The American species is *C. ANTHERICOIDES* Presl., Rel. Haenk. 204 (1828), originally collected at Nootka Sound on Vancouver Island; and it is distinguished from the Asiatic by characters of the rootstock, lowest leaves, rosette-leaves, culm, scales, anthers and achenes. The original description by Willdenow of the Asiatic plant was meagre, but the very complete description of true *C. macrocephala* given by Regel<sup>1</sup> and beautifully illustrated by him may be compared

<sup>1</sup> Regel, Tent. Fl. Ussur. 164, t. xii. figs. 8-12 (1861).

with the equally full original description by Presl of his *C. anthericoides* or the beautiful plate (as *C. macrocephala*) of Francis Boott.<sup>1</sup> The Regel and Presl descriptions and the Regel and Boott plates accurately portray the two species, while Kükenthal's description<sup>2</sup> was based primarily upon Asiatic material and Mackenzie's description and accurate figure of the American plant in Abrams's Illustrated Flora<sup>3</sup> are drawn from American specimens.

The rootstock of *C. macrocephala* soon loses the shredded sheaths, that of *C. anthericoides* retains them tightly investing the internodes. In *C. macrocephala* the leafy shoots have few if any bladeless basal leaves, and the bases of the true foliage-leaves quickly disintegrate into fibres ("Culmi . . . basi fibris foliorum emarcidorum vestiti"—Regel); in *C. anthericoides* the basal leaves are reduced, dry and bladeless and they, as well as the long green leaves above them, rarely if ever disintegrate into fibres. In *C. macrocephala* the upper leaf-surface is scarcely ribbed, in *C. anthericoides* prominently so; in *C. macrocephala* the fresh leaf-margins are coarsely (often papilately) toothed ("Folia . . . marginibus grosse serrata"—Kükenthal), in *C. anthericoides* the serration is much finer and spinulose ("margins minutely but sharply serrulate"—Mackenzie). The culm of *C. macrocephala* is very obtusely angled, almost cylindrical, and smooth ("Culmi . . . obtuse triangulares, leaves, glabri"—Regel; "Culmus . . . obtusangulus laevis"—Kükenthal); the culm of *C. anthericoides* harshly serrate on the sharp angles ("Culmus . . . triqueter striatus angulis serrato-scaber"—Presl; "Culmus . . . triqueter, scaber"—Boott; "Culms . . . often strongly roughened on the angles"—Mackenzie). In *C. macrocephala* the scales of the spikes are herbaceous and greenish, with pale firm borders, becoming drab, and they are conspicuously toothed on the margin ("Squamae . . . praecipue apicem versus serrulatae, herbaceae,"—Regel; "Squamae . . . in acumen . . . marginibus eroso-denticulatum attenuatae"—Kükenthal); in *C. anthericoides* the scales have thin, scarious or hyaline brown sides and, except for the outer bracteal ones, are quite entire ("Glumae . . . dorso nervoso-striatae virescentes, margine fuscae"—Presl; "squama . . . ferruginea"—Boott; "scales . . . brownish with green center and hyaline margins"—Mackenzie), the margins beautifully

<sup>1</sup> Boott, Ill. Carex, i. 27, t. lxxix (1858).

<sup>2</sup> Kükenthal in Engler, Pflanzenr. iv<sup>20</sup>. 187 (1909).

<sup>3</sup> Mackenzie in Abrams, Ill. Fl. i. 293, fig. 691 (1923).

shown in the illustrations cited, Regel's fig. 12 of the Asiatic plant showing the characteristically toothed scale, Boott's figs. *c*, *g* and *h* and Mackenzie's figure of the American correctly representing entire scales. The anthers of the Asiatic *C. macrocephala*, as shown by 4 staminate inflorescences before me, are 4.5–6 mm. long; in the American *C. anthericoides*, as shown by Boott's illustration and by several sheets of specimens, only 2–3.3 mm. long. The achene of the Asiatic *C. macrocephala* tapers to the base, that of the American is strongly rounded at both ends, as clearly shown in Boott's figs. *ff*.

Altogether, the specific distinctness of the plants of the two sides of the North Pacific is apparent. Geographically they parallel numerous other cases and it is at least worth noting that true *Carex macrocephala*, now establishing itself on the Atlantic coast of North America comes from the same region as the other sea-shore species, *Artemisia Stelleriana* Besser, which has rapidly fixed itself upon our coastal dunes and beaches. It is also not without interest that the coarse Sand Reed or Psamma of Atlantic America, *Ammophila breviligulata* Fernald<sup>1</sup> should have proved to be specifically quite unlike the European *A. arenaria* (L.) Link; but that the European, rather than the Atlantic American, plant should have made itself at home on the Pacific coast of North America.

(To be continued.)

---

DYNAMIC FORCES IN THE FLORA OF QUEBEC.<sup>2</sup>—In this interesting address, delivered by Frère Marie-Victorin, as retiring president of the Société Canadienne d'Histoire Naturelle, we have the Quebec Flora viewed as something dynamic, mobile, feeling the surge of life, and the constant impulse to change. The apparent stability of the flora during a period of years, or even a century, cannot hide the fact that all is changing. "Plant associations are living mosaics where slowly, parallel to the physical evolution of the ecologic factors, and often outside of it, substitutions take place. The equilibrium which impresses us by its apparent stability is only an equilibrium of the whole, and not the equilibrium of the parts; it is only a resultant, a product which remains apparently the same during very long periods at least, but the factors of which are subject to perpetual changes of order and importance."

The influences which affect the flora of a region may be classified more or less arbitrarily as intrinsic, those which arise from the possibilities inherent in the plant life itself, and extrinsic, those which arise from

<sup>1</sup> Fernald, RHODORA, xxii. 71 (1920).

<sup>2</sup> *Le Dynamisme dans la Flore du Québec*, par Frère Marie-Victorin. 89 pages, 42 figures, 1929. \$1.00. Contributions du Laboratoire de Botanique de L'Université de Montréal, No. 13.